

expand without stressing the casing in any way. The first set of nozzles admits steam up to a half load, the second up to full load, and the third comes into operation on overload.

Fig. 20 shows a sectional drawing of a steam chest as used on large turbines. The body of the steam chest consists of two pipes, an inner and an outer pipe. The inner pipe, to which steam is supplied from the main stop valve, is provided with three valves which admit the steam to three compartments formed within the steam belt between the inner and the outer pipes. Each of the compartments in turn communicates with its corresponding nozzle box and nozzles.

The valve operating mechanism is arranged so that the forces are acting in one plane, and the parts which are subject to wear are removed as far as possible from those parts which are subjected to high temperatures.

It will be seen that the three governor valves are actuated by means of oil pressure under the control of relay mechanism fitted to governor valve number one. As the load exceeds that which valve number one is designed to carry when fully opened, the spindle of this valve continues to move upwards, carrying with it a lever pivoted at one end and attached at the other end by means of a short vertical adjustable link to one end of a second lever, the other end of which is pivoted at a fixed point above the governor valve number three. This lever moves in the same plane as the lever situated above valve number one, and carries with it a floating lever which is connected at its extremes to governor valves two and three. The springs which close valves two and three are so adjusted that for an increasing load valve number three remains closed until valve number two is fully opened, and for a decreasing load valve two does not begin to close before valve three is fully closed. In like manner valve number one does not begin to close on a decrease in load until valve number two is fully closed.

Fig. 21 shows a section through a 12,500-hp. turbine running at 3000 r.p.m., and embodies the makers' patent multiple exhaust blading in the low-pressure stages which they adopt in all large high-speed turbines. In the twelfth stage diaphragm the steam is divided into two parts

by an annular division ring. The outer part of the diaphragm blades is designed to expand the steam to condenser pressure, whereas no appreciable fall of pressure-occurs across the inner part of the blades.

The corresponding moving blades are again subdivided by a ring, and whereas the outer part of the blades is shaped to utilize the kinetic energy acquired by the steam in the outer part of the preceding diaphragm, the inner part is so shaped as to allow the steam to pass without appreciable expansion. This steam quantity then enters the next stage which is formed/ on similar lines, and the steam passing through the inner part of this stage is finally expanded to condenser pressure in the last stage whose area is available for the purpose. The number of stages embodying multiple-exhaust blading is varied according to the output speed and exhaust pressure. The small additional leakage losses encountered due to this system are claimed to be of small moment in comparison to the advantage accruing from the use